



## CIRAS Helps Nonprofits Improve, Continue to Provide Jobs

*Loy Van't Hul believes one of the keys for Double HH Manufacturing is a focus on getting the job done.*

"We provide quality products for a wide range of industries, and who we use as an operator, whether that person has a disability or not, shouldn't make a difference," said Van't Hul, Double HH's director of manufacturing operations.

Double HH (a subsidiary of the broader Rock Valley-based Hope Haven Inc.) is one of a half-dozen CIRAS clients who exist both as nonprofit companies and as vocational rehabilitation firms, using physically or intellectually disabled workers to provide products or services.

Double HH, which Van't Hul describes as a "reverse integration operation," is an outlier among such Iowa agencies in that

it uses a 50-50 mix of workers, assigning daily tasks between employees with and without disabilities based on individual skills. However, "any time we need to have an employee meeting, we don't have two meetings," Van't Hul said. "We have one meeting for all of the employees."

The underlying message is that the good of the company requires everyone working together to meet customer quality and delivery requirements. The work must get done and done properly. Toward that end, Double HH long has turned to CIRAS whenever it's needed outside engineering, production, or training expertise.

"We've worked with CIRAS a number of times over my 30+ years here, and it's been quite successful," Van't Hul said. "CIRAS has always been good about approaching it the right way—just treating it like a business and adapting things slightly."

In the past five years alone, CIRAS has helped the company improve processes, test products, and train workers to the tune of more than \$1.2 million in company-estimated economic impact.

The key to the relationship, according to both Van't Hul and CIRAS account manager Derek Thompson, is CIRAS' focus on making Iowa businesses

*Continued on page 2*

- 1 CIRAS Helps Nonprofits Improve, Continue to Provide Jobs
- 3 Made in Iowa
- 4 Donatech Uses CIRAS' Help as Stepping Stone to Success
- 4 GovTalk—B2G Sales
- 5 State of the State
- 6 Why Iowa Firms Should Find Their Way to Manufacturing USA
- 9 Mergers Point to Major Success for Innovative Iowa Companies
- 10 Snapshot of Iowa's Information Sector
- 11 CCUR Director Celebrates a Year "On the Edge of Where Science Is"
- 12 Iowa FIRST LEGO® League Close to Top in Per Capita Participation
- 13 Health Insurance—A Prescription for Fear among Iowa Manufacturers
- 13 Noteworthy
- 14 Upcoming Events
- 14 For the Record
- 15 Contact Information
- 16 CIRAS 3-D Printer Building a Foundation for Future Success while Stabilizing Cheerleaders

**On the Cover:** Loy Van't Hul discusses workflow. Double HH workers sort hitch pins that have just received their trademark red handle.

**CIRAS Mission:** *Every day we will enhance the performance of industry through applied research, education, and technical assistance.*

CIRAS is supported in part by the DoC/NIST Manufacturing Extension Partnership, the DoD/DLA Procurement Technical Assistance Program, the DoC/EDA University Center Program, and the State of Iowa Economic Growth Committee appropriation for the CIRAS Technology Assistance Program.

**CIRAS News** is published quarterly by the Center for Industrial Research and Service and edited by the CIRAS publications team. Design and production is by Hobbs Designs, LLC. Please send questions, comments, or address changes to [ciras.news@iastate.edu](mailto:ciras.news@iastate.edu).—November 2016 HD16110

Articles may be reprinted with the following credit line: "Reprinted from *CIRAS News*, Vol. 52, No. 1, a publication of Iowa State University Center for Industrial Research and Service." Please send a copy of the reprint to *CIRAS News*, 1805 Collaboration Place, Suite 2300, Ames, Iowa 50010-9166.

Iowa State University does not discriminate on the basis of race, color, age, ethnicity, religion, national origin, pregnancy, sexual orientation, gender identity, genetic information, sex, marital status, disability, or status as a U.S. veteran. Inquiries regarding non-discrimination policies may be directed to Office of Equal Opportunity, 3350 Beardshear Hall, Ames, Iowa 50011, Tel. 515 294-7612, email [eooffice@iastate.edu](mailto:eooffice@iastate.edu).

better. For Double HH to assist people with disabilities, it first and foremost has to exist.

"We treat them wholly as a manufacturer," Thompson said. "The fact that they're a nonprofit or a for-profit makes no difference."

CIRAS has relationships with similar entities across Iowa, from Nishna Productions Inc. in Shenandoah to the Handicapped Development Center (HDC) in Davenport. All of them, like Double HH, depend on business success to keep social service programs viable.

"The service CIRAS provides is actually a huge help to us," said Seth Johnson, business developer at Nishna Productions. His agency recently was awarded a contract to provide laundry services for the Iowa Air National Guard at Camp Dodge and has been pursuing a similar arrangement with Offut Air Force Base in Omaha. CIRAS government contracting specialist Andy Alexander has helped the company decipher complex federal regulations and connect with federal purchasing officials.

Procurement practices don't always come naturally for people drawn to work at nonprofit social service agencies, Johnson said. But finding high-volume, consistent contract work is imperative for Nishna's fledgling laundry, which officials hope will one day grow to support other training opportunities.

"This is a huge market for us to grow our market share in laundry services," Johnson said. While Nishna has experience with other government contracts, CIRAS "has been a great resource for us."

North Iowa Vocational Center (NIVC) in Mason City likewise sought CIRAS' help several years ago, eventually leading to NIVC's decision to fold a money-losing can-sorting business. CIRAS last year helped NIVC launch a new sideline business selling wooden cremation urns. Since then, the focus has shifted to streamlining and strengthening a business selling custom-made pallets and crates.

Sherry Becker, executive director for NIVC Services Inc., said the relationship with CIRAS "continues to help us improve our operations and . . . become even more businesslike. We will need to continue to focus on product-oriented, marketing-driven products to help us accomplish the bigger vision of helping those with barriers find work."

Sometimes, nonprofits do require an extra layer of assistance. CIRAS government contracting specialists Beth White and Melissa Burant recently arranged a meeting between several Iowa nonprofits and federal officials who administer a government set-aside program for such agencies. A vocational rehabilitation facility can receive preference from government purchasing officers if the business qualifies as an "Ability One" agency, but the nonprofit still must understand the process and know how to market itself effectively within that system.

"It's very similar to what we do with other companies," Burant said. "But in other ways it's also very different. . . . We help some places a little bit differently, because it's a different focus."

"We treat them wholly as a manufacturer. The fact that they're a nonprofit or a for-profit makes no difference."

—Derek Thompson

*Look closely at Iowa's rolling landscape and you may be surprised to discover what is made here. Companies here create everything from machinery and pastry to software and bridges. Each issue, CIRAS News provides a sampling of some of the Iowa businesses you can support.*

## CEI Equipment

**Overview:** CEI Equipment produces a broad range of aluminum feed transportation equipment that is used throughout the world. Equipment comes in various designs with capacities ranging from 2-ton bodies to 30-ton trailers.

**Location:** Cedar Rapids, Iowa

**Founded:** 1976

**Employees:** 115

**Website:** [www.ceipacer.com](http://www.ceipacer.com)



## Fat Baggers, Inc.

**Overview:** Fat Baggers, Inc. (FBI), makes and sells innovative, top quality motorcycle parts for the American V-Twin Bagger market, in addition to aftermarket Bagger part lines and Harley-Davidson® accessories for the touring model. FBI has experienced engineers, mechanics, installers, and sales reps on staff, helping the company provide clear and complete product information and installation advice.

**Location:** Chariton, Iowa

**Founded:** 2004

**Employees:** 15

**Website:** [www.fatbaggers.com](http://www.fatbaggers.com)



## ProbioFerm, LLC

**Overview:** ProbioFerm, LLC, produces probiotic cultures and private label packaging for human supplement, companion animal, and agricultural uses. The company also provides contract fermentation services utilizing state-of-the-art fermentation and testing equipment.

**Location:** Urbandale, Iowa

**Founded:** 2009

**Employees:** 19

**Website:** [www.probioferm.com](http://www.probioferm.com)



Amy Cook, account manager at the Handicapped Development Center in Davenport, said CIRAS has helped her agency make business contacts beyond the government world by inviting her to regular networking events. The HDC's roughly 100 employees do a variety of small jobs for companies, including small parts assembly and packaging, document scanning, bulk mailing, screen printing, and embroidery.

"We look at ourselves as a partner for a business," Cook said. "If you've got a job that is a repetitive job, you can send that work here and free up your employees to work on something else."

CIRAS in several cases has encouraged vocational rehabilitation agencies with complementary services to join forces in pursuit of larger government contracts.

The HDC, which recently landed a small contract to print contaminant signs for the U.S. Navy, currently is looking for an opportunity to partner with Muscatine-based Crossroads Inc., which provides various packaging, assembly, and document-shredding services. As of yet, no such opportunities have presented themselves.

"But just the fact that they're thinking outside their normal box is a big deal for them," White said.

In the coming years, vocational rehabilitation agencies likely will continue to feel pressure to be more businesslike—as well as ongoing pressure from advocates for the disabled, who would like to see Iowa speed up the pace at which the state integrates disabled workers into the general population.

For CIRAS, the role will be the same.

"They need help, we help them," Thompson said. "Although it does provide a little more personal satisfaction if we can help the company, the community, and the people there by helping them stay in business."



**At top,** Handicapped Development Center client Lloyd Larkey packages bearings as part of a contract the agency has with John Deere. **Below,** Nick Gerber uses a machine that seals and barcodes polybags.

➤ **For more information, contact Melissa Burant at [mmburant@iastate.edu](mailto:mmburant@iastate.edu) or 563-726-9958.**

## Donatech Uses CIRAS' Help as Stepping Stone to Success

*CIRAS training and support have helped a Cedar Rapids company broaden its reach into the world of government contracting.*

Pat Adam, vice president of strategic accounts at Donatech Corporation, said a decade-long relationship with CIRAS began with a search for help. The company previously had success providing engineering services and technical staffing to a local defense and aerospace client. But company leaders knew diversification was needed.



*"As we reached out to other large primes and directly to some [Department of Defense] branches, it became evident there was a big learning curve."*

*— Pat Adam*

"As we reached out to other large primes and directly to some [Department of Defense] branches, it became evident there was a big learning curve," Adam said. To gain confidence, the company sought education from CIRAS' Procurement Technical Assistance Program (PTAP).

Government contracting specialist Julie Fagle said Donatech has attended a wide variety of CIRAS-provided training over the past five years, including repeat visits to PTAP's annual Corridor Procurement Conference and multiple networking events. The focus has been on building relationships with companies open to sharing customer referrals and/or joining Donatech for a project.

"The results have been really good in making a lot of favorable introductions to local companies that we might be able to partner with from a business standpoint," Adam said.

Donatech also has used a bid-match program provided by CIRAS that allows businesses to view local, state, and federal opportunities specific to their industry. Additionally, Adam said the company received solid guidance from CIRAS about working with prime government contractors, such as Lockheed Martin, L-3, and Rockwell Collins, even in times of growing complexity.

"As we've pushed and expanded our client base, complexity and compliance requirements have expanded as well," Adam said.

Fagle said CIRAS helped Donatech navigate "flow down" requirements in contracts that hold subcontractors, as well as primes, responsible for following federal regulations.

Fagle sees Donatech as "a robust organization" with a solid foundation in government contracting. "CIRAS looks forward to watching them evolve and grow in the years to come."

➤ **For more information about subcontracting relationships, contact Julie Fagle at [jafagle@iastate.edu](mailto:jafagle@iastate.edu) or 319-310-8612.**

## Learn, Grow, and Expand Your Government Market through Subcontracting *by Julie Fagle*

There's an old phrase that may take on special meaning for small businesses that have struggled with government contracting: if you can't beat them, join them.

Subcontracting opportunities can be a lucrative way for companies to tap into the government market without struggling against larger competitors—or even dealing directly with the government.

Companies that don't fit the government definition of a "small" business and that receive federal contracts for more than \$750,000 (or \$1.5 million in the case of construction contracts) are responsible for an accompanying subcontracting plan. Basically, the prime contractor is expected to reserve a percentage of the work for small businesses. The plan specifies what portion of the total dollar amount is to be spent on preference programs such as those for women-owned, disadvantaged, and service-disabled veteran-owned businesses.

Federal agencies can tell you which prime contractors currently hold contracts with subcontracting plans—although how they distribute this information may vary from agency to agency.

Why would you want to become a subcontractor?

For one thing, subcontractors don't need to prove past performance to the government or that they, themselves, have the staff or support structure necessary to carry out a large contract. Subcontracting also provides an opportunity to learn from a larger firm that might turn out to be a mentor or partner.

Interested? Start by exploring all the possibilities in which your product or service might fit into an end product, then look for the government agency that would use such a product. For example, might your components be suitable for an airplane cockpit? Could your cleaning service work in a government building?

Once you find the appropriate government agency, research the prime contractors in your demographic area and get to know them. We can help. CIRAS hosts many events throughout the year to help businesses learn how they can profit together.

# A Look at Where Workers Are Focused by Liesl Eathington

A previous “State of the State” explored growth in Iowa’s young worker population and the fact that production jobs are a declining fraction of the opportunities available to them. The breadth of those opportunities—or at least workers’ perceptions of what opportunities exist in the labor market—can be glimpsed in trends for post-secondary education.

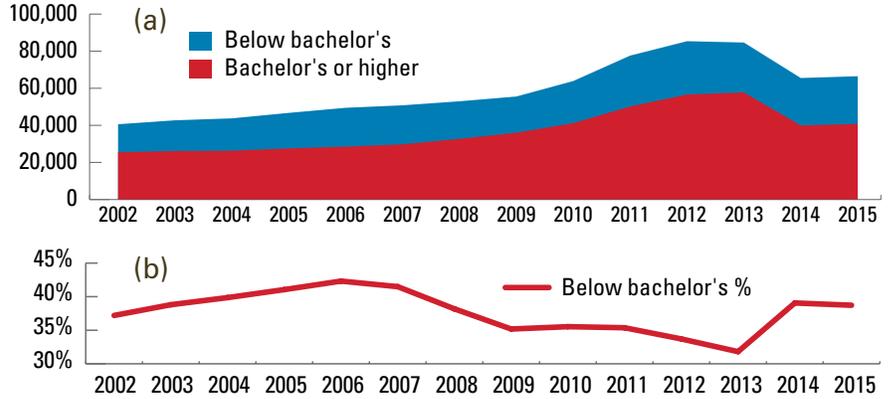
The number and mix of programs completed at Iowa’s post-secondary institutions reveal evolving preferences among people preparing to enter the workforce or seeking to upgrade their skills.

Figure 1 illustrates recent trends in the number of degrees and certificates awarded by Iowa’s technical and vocational institutions, colleges, and universities. In the 2014–2015 academic year, students completed 66,500 post-secondary educational programs in Iowa. Total completions were up slightly from the prior year but still below peak levels achieved after the 2007–2009 recession. Associate and other degrees and certificates below the bachelor’s level accounted for 39 percent of 2014–2015 awards, up from a low of 32 percent in 2013.

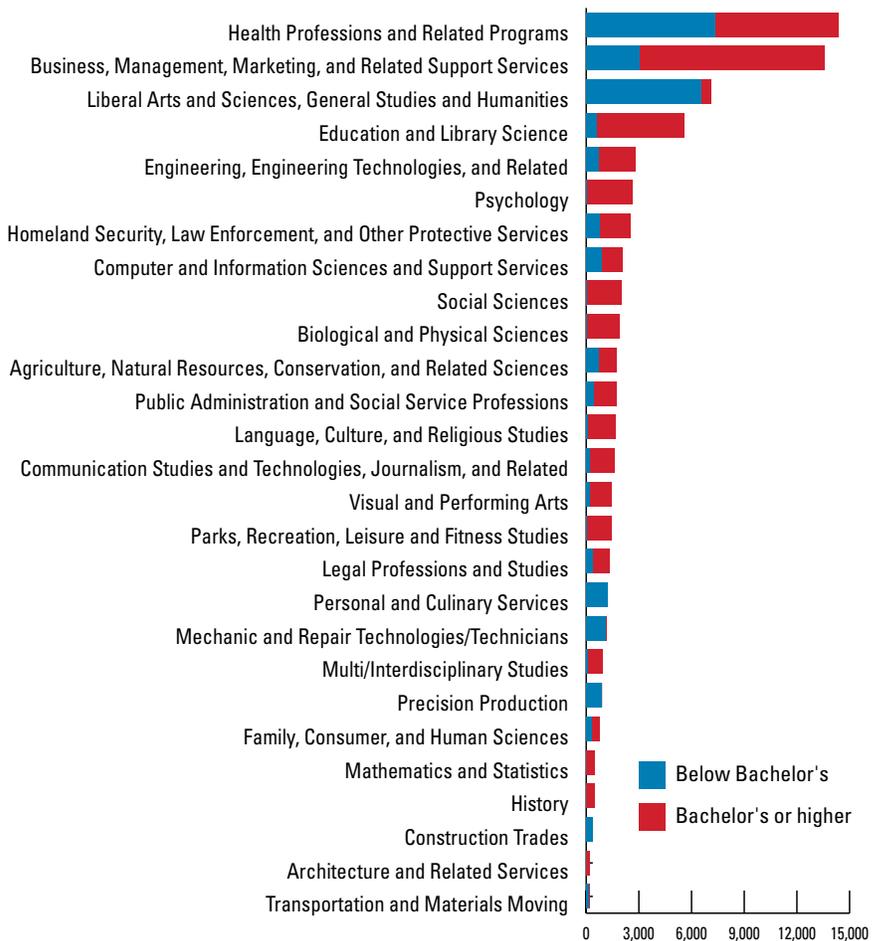
Figure 2 illustrates the distribution of recent program completions by field of study and program duration. Health- and business-related fields lead all program areas in terms of overall completions. Students pursuing health-related fields are evenly split among bachelor’s and higher degree programs and programs below the bachelor’s level. In business-related programs, about one-quarter of awards are made below the bachelor’s level.

Completions in precision production programs numbered fewer than one thousand per year from 2013 to 2015. Considering only awards below the bachelor’s level, precision production ranked just below mechanic and repair technologies and just above computer and information sciences and support services.

People generally invest in education with expectations for improving their future employment and earnings opportunities. Examining how students are investing their educational dollars and their time to identify areas of perceived career opportunity might help Iowa’s employers compete more effectively for the future workforce members.



**Figure 1a.** Annual Program Completions at Iowa’s Colleges, Universities, and Technical/Vocational Institutions **Figure 1b.** Degrees/Certificates below Bachelor’s Level as a Percentage of All Post-Secondary Completions



**Figure 2.** Post-Secondary Completions by Program Area and Degree Level in Iowa, 2013–2015 Averages



DMDII in Chicago.  
Photo: Tedescopictures.com

## Why Iowa Firms Should Find Their Way to Manufacturing USA

By Mike O'Donnell

*At this very moment, the future of American manufacturing is being written at nine specially linked institutes fueled by \$2.1 billion from the U.S. government, research universities, and hundreds of American companies.*

It's known as the National Network of Manufacturing Innovation (NNMI) – or, following a rebranding campaign launched in mid-September, as “Manufacturing USA.” If you aren't familiar with it, you should begin educating yourself as soon as possible. Because your ability to compete could change dramatically, depending on the work taking place there and how quickly you're willing and/or able to embrace it.

Manufacturing USA is a network of public-private partnerships designed to combine resources and expertise so that technology moves rapidly from research to real solutions. This is happening mostly through “project calls,” where member-driven groups identify key needs in a given technology area and decide which projects to fund. The goal is simple: do something real, and do it fast.

All nine institutes (six more are planned by next year) are designed to let everybody get involved—from the biggest corporations to the smallest companies. You can become a member of some institutes for as little as \$500/year, giving you access to technology roadmaps, input into long-term direction of technologies, and in some cases, the ability to be involved in pilot projects.

As of this writing, 14 Iowa manufacturers have joined at least one institute. The smallest Iowa-based member has just a handful of employees; the largest has thousands.

CIRAS has a simple request: look at Manufacturing USA, decide what part of it is most relevant to your business, and engage right now.

### Why this matters

Change is coming, and Iowans need to embrace it if they don't want to be left behind.

Perhaps the most important part of Manufacturing USA for Iowa companies is the Digital Manufacturing and Design Innovation Institute (DMDII) in Chicago. It also is the most

difficult to explain. While other institutes focus on particular technology areas, such as composites or flexible hybrid electronics, the DMDII focuses on a cross-cutting suite of technologies that enable the “digital thread.” There are three “thrust areas” in the DMDII: Advanced Analysis, Intelligent Machines, and Advanced Manufacturing Enterprise.

### Digital manufacturing—

(n.) The ability to connect different parts of the manufacturing life-cycle through data, and to utilize that information to make smarter, more efficient business decisions.

Source: DMDII

The main theme connecting it all is a desire to make information flow more easily inside and between industrial businesses—much as Facebook, Amazon, and Uber have helped consumers discover new ways to find and share what they want.

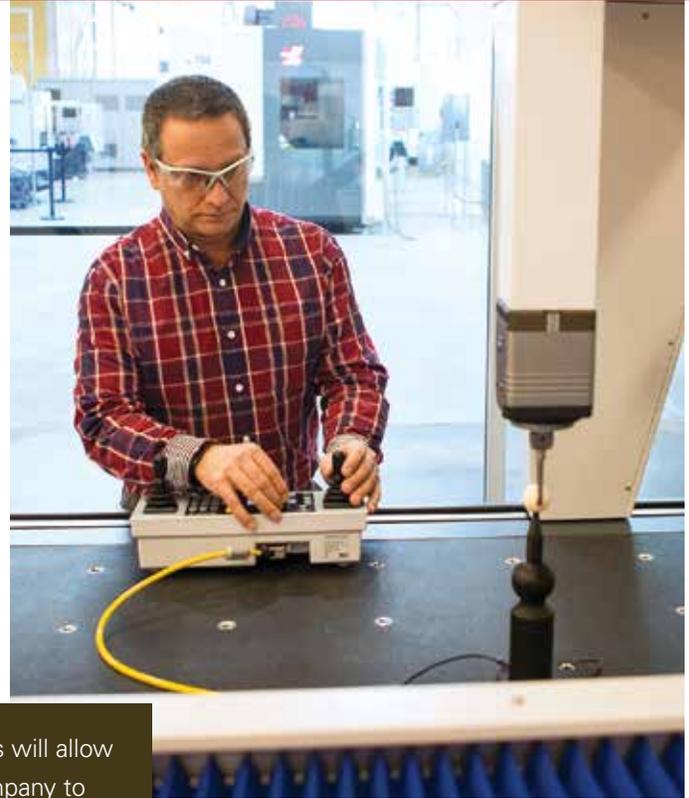
In the DMDII's case, more than 260 partners have come together—including companies such as GE, Microsoft, and Siemens, as well as leading universities, government agencies, start-ups, and nonprofit and community groups. Their joint goal is to rapidly move these connecting technologies from research to industry. Early results indicate that the pace of change is about to accelerate.

For companies, however, change will not come as easily as deciding to shop at Amazon instead of driving to a store. Would-be digital manufacturers will have to master the basics before they leap into "Industry 4.0." Want to optimize your supply chain? You'll need a real-time accurate ERP system. Want to apply intelligent machining tools to optimize design? Your entire business (and your suppliers) better have 3D CAD models that reflect what is being built today.

Of course, there will be interim steps along the way during which companies with "digital maturity" will be able to see real value from technologies as they absorb them. For example, CIRAS' research shows that 3D CAD and Advanced Engineering Tools maturity correlates with reduced worries about labor costs, and our experience shows that manufacturers receive ROI when implementing most other digital tools. The DMDII is developing an assessment to help manufacturers understand how ready they are and what comes next.

If you need another reason to embrace digitally integrated manufacturing, consider this: your customers will soon require it. Iowa's manufacturing landscape is dominated by key suppliers in machinery, transportation, and aerospace. Given the potential benefits, those industries are at the front of the digital manufacturing push, and getting results requires a supply chain able to play at the same digital level as the OEMs. At this point, it's not clear what anything will look like. But it is likely that the digital maturity assessment from the DMDII will be a key factor in what those OEMs expect.

The shift to digital manufacturing also will create many localized opportunities. Digital tools will allow your company to better link design, manufacturing, and supply chain operations, potentially creating significant new efficiencies. Companies on the front of this wave stand to gain significant market share.



Kelley Patrick, lead manufacturing engineer at DMDII, showcases cutting-edge metrology capabilities. *Photo: Tedescopictures.com*

Digital tools will allow your company to better link design, manufacturing, and supply chain operations, potentially creating significant new efficiencies. Companies on the front of this wave stand to gain significant market share. Those who aren't may get left behind.

Those who aren't may get left behind.

Iowa is well positioned to be a leader in adopting digital manufacturing and capitalizing on this opportunity. CIRAS' 2015–2016 manufacturing needs assessment shows that 3D CAD and Advanced Engineering Tools are among the most-implemented initiatives in the state. Iowa has the capacity to handle these tools. Our survey, however, shows that only 27 percent of companies have fully implemented them across the organization. Room exists for growth. Any needed help, in terms of digital manufacturing expertise, is already here—as evidenced by the fact that Iowa State University was the lead organization on three of the seven winning teams nationally in the most recent round of projects funded by the DMDII.

Today, CIRAS is issuing a challenge: Let's make Iowa the most digitally capable state in the country. Let's create opportunities for companies, improve the quality of life through higher paying jobs, and start to define the future of manufacturing for ourselves. Please call us if you'd like to help chart the path.

*Turn to page 8 for details about each institute in Manufacturing USA.*

➤ For more information, contact Mike O'Donnell at [modonnll@iastate.edu](mailto:modonnll@iastate.edu) or 515-294-1588.

**Manufacturing USA (also known as the National Network for Manufacturing Innovation) is a public-private partnership created by federal legislation passed over the last several years. It consists of nine centers, each focused on a specific area of research.**

For more on the importance these entities could have for Iowa businesses, please see the story beginning on page 6.



**Advanced Functional Fabrics of America (AFFOA)**

<http://www.rle.mit.edu/fabric/>

AFFOA (Cambridge, Massachusetts) seeks to enable a manufacturing-based revolution by transforming traditional fibers, yarns, and fabrics into highly sophisticated, integrated, and networked devices and systems.



**America Makes**

**America Makes: The National Additive Manufacturing Innovation Institute**

<https://americamakes.us/>

America Makes (Youngstown, Ohio) is the nation's leading and collaborative partner in additive manufacturing and 3-D printing technology. It exists to facilitate the development, evaluation, and deployment of efficient and flexible AM technologies.



**American Institute for Manufacturing Integrated Photonics (AIM Photonics)**

<http://www.aimphotonics.com/>

AIM Photonics (Rochester, New York) seeks to advance the development of integrated photonic circuit manufacturing technology for use in systems spanning commercial and defense applications.



**Digital Manufacturing and Design Innovation Institute (DMDII)**

<http://dmdii.uilabs.org/>

The Digital Manufacturing and Design Innovation Institute (Chicago, Illinois) encourages factories across America to deploy digital manufacturing and design technologies so those factories can become more efficient and cost competitive.



**The Institute for Advanced Composites Manufacturing Innovation (IACMI)**

<http://iacmi.org/>

IACMI (Knoxville, Tennessee) is committed to accelerating development and adoption of cutting-edge manufacturing technologies for low-cost, energy-efficient manufacturing of advanced polymer composites for vehicles, wind turbines, and compressed gas storage.



**LIFT—Lightweight Innovations For Tomorrow**

<http://lift.technology/>

LIFT (Detroit, Michigan) exists to develop and deploy advanced lightweight materials manufacturing technologies, as well as implement education and training programs to prepare the workforce.



**NextFlex, the Flexible Hybrid Electronics Manufacturing Innovation Institute**

<http://www.nextflex.us/>

NextFlex (San Jose, California) seeks to advance U.S. manufacturing of flexible-hybrid electronics.



**PowerAmerica**

<http://www.poweramericainstitute.org/>

PowerAmerica (Raleigh, North Carolina) seeks to accelerate the adoption of advanced semiconductor components made with silicon carbide and gallium nitride into a wide range of products and systems.

**Announced June 20, 2016—A new Smart Manufacturing Innovation Institute, to be led by the Smart Manufacturing Leadership Coalition (SMLC) in Los Angeles, California**

The new institute will be focused on spurring advances in smart sensors and digital process controls that can radically improve the efficiency of U.S. advanced manufacturing. For more information, watch [www.smartmanufacturingcoalition.org](http://www.smartmanufacturingcoalition.org).

# Mergers Point to Major Success for Innovative Iowa Companies

Three major business deals involving some of Iowa's most innovative and best-run firms in their fields should send a strong message to other Iowa companies, CIRAS believes: innovation combined with strong business skills reaps substantial reward.



HARRISVACCINES™



The owners of Harrisvaccines, Harvest Innovations, and Hagie Manufacturing all agreed over the past year to sell major portions of their companies to larger firms. All now stand to profit substantially from a newly broadened reach for their industry-leading products.

Ames-based Harrisvaccines was sold to pharmaceutical giant Merck & Co. in November 2015—at least partly, according to company statements at the time, to help Harrisvaccines grow.

Joel Harris, associate director of marketing for Merck Animal Health, said Merck still “sees strategic value in the Harrisvaccines brands and associated RNA vaccine technology” and intends to keep the vaccine production in Ames.

Meanwhile, the owners of Indianola-based Harvest Innovations continued working this summer to blend their firm with Archer Daniels Midland Company. In February, ADM announced that it had purchased a majority stake in Harvest Innovations, which produces soy proteins, oils, and gluten-free ingredients. At the time, an ADM official said Harvest Innovations “perfectly complements our existing ingredient businesses and offers customers a full-service, one-stop shop for their ingredient needs.”

The third company, Hagie Manufacturing, announced in March

that it had sold a majority stake to Deere & Company. Deere officials described the Clarion, Iowa, sprayer manufacturer as “known for its innovation and its strong customer understanding” and promised to continue the Hagie brand. A Deere spokesman later said the purchase “was based on expanding our product line to new customers.”

The overarching theme among these companies, according to CIRAS Director Ron Cox, is that they all have strong management teams, strong workplace cultures, and strong track records for innovation.

“It all starts with the fact that all three of these companies had visions that were bigger than selling something to make money.”

— Ron Cox

“It all starts with the fact that all three of these companies had visions that were bigger than selling something to make money,” Cox said. “They created strong business systems, with employees and leaders who are invested in doing the

right things to help the business. In the process, they’ve each developed strong products that certain segments of their markets really, really want.”

All three also are CIRAS clients and have worked on projects estimated to have had a combined economic impact of nearly \$200 million over the last five years.

“Obviously, innovation can be profitable,” Cox said. “The lesson for other Iowa companies is to aim high.”

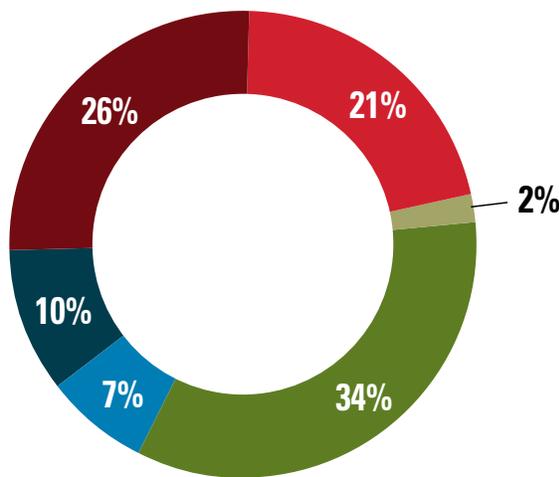
➤ For information about how CIRAS can help foster innovation, contact Ron Cox at [rcox@iastate.edu](mailto:rcox@iastate.edu) or 515-294-0099.

# Snapshot of Iowa's Information Sector by Liesl Eathington

## What industries and activities are included within the information sector?

Information firms create, process, disseminate, or enable distribution of data, cultural products, and other information. The sector is a comparative newcomer to our industrial classification scheme, making its debut in 1997 with the introduction of the North American Industry Classification System (NAICS). The new sector combined emerging industries such as cellular and wireless communications with established information-related industries that were previously classified within the manufacturing, transportation and utilities, and services sectors.

Publishers of newspapers, books, directories, and software have the largest employment share with 34 percent of information sector jobs (see Figure 1).



- Data Processing, Hosting, and Related Services (6,424 jobs)
- Telecommunications (7,925 jobs)
- Broadcasting (2,880 jobs)
- Motion Picture and Sound Recording (2,057 jobs)
- Publishing (10,250 jobs)
- Other Information Services (508 jobs)

Figure 1. Composition of Iowa's Information Sector

## How many of these types of firms are located in Iowa?

Iowa had 1,477 information firms with employees on payroll in 2014 and another 2,198 firms operating as "nonemployer" establishments with no paid employees other than the owner(s). Telecommunications firms account for the largest share (42 percent) of employer establishments, while publishing firms account for the largest share (33 percent) of nonemployer establishments.

## How does the information sector compare in size to the rest of Iowa's economy?

The information sector's 30,044 full-time and part-time jobs accounted for 1.5 percent of all Iowa jobs in 2014. In terms of establishments, the sector accounted for 1.8 percent of employer firms and 1.1 percent of nonemployers.

Measured by gross domestic product (GDP), which includes payments to workers and returns to owners and investors, the information sector contributed approximately \$4.6 billion to Iowa's economy in 2015, or 2.6 percent of total GDP (see Table 1).

Table 1. Information Sector Shares of Iowa Totals

	Information	% share of Iowa total
Total jobs (2014)	30,044	1.5 percent
Employer establishments (2014)	1,477	1.8 percent
GDP (2015)	\$4.58 billion	2.6 percent

## Who works in Iowa's information sector?

Nearly one-quarter of information sector jobs entail office or administrative support roles. Key occupations include customer service representatives, telecommunications equipment installers and repairers, office clerks, and advertising sales agents. Median annual pay for all occupations in the information sector was \$39,760 in 2015.

## How has the information sector been performing?

Iowa's information sector employment decreased by nearly 20 percent from 2004 to 2014, far exceeding the national decline of 7 percent. Iowa also differed from the United States in the composition of its information job loss—publishing industries lost 60 percent of information sector jobs nationally, compared to just 30 percent in Iowa. Broadcasting jobs accounted for 6 percent of the losses in Iowa and 12 percent nationally. Nearly two-thirds of Iowa's losses occurred in data processing and other information industries, compared to just 30 percent nationally. Figure 2 shows the percentage rates of 2004–2014 information job loss by broad category.

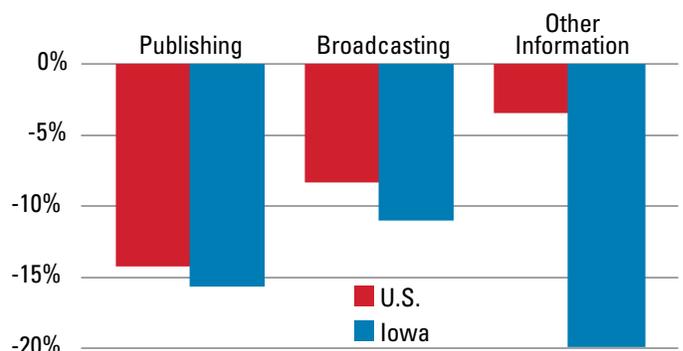


Figure 2. Rates of Information Sector Job Loss, 2004–2014



Director Kevin Keener inside CCUR's pilot-scale processing facility.

## CCUR Director Celebrates a Year “On the Edge of Where Science Is”

*Kevin Keener sees enormous potential in the innovative projects taking root at Iowa State University's Center for Crops Utilization Research (CCUR).*

Keener, now entering his second year as CCUR's director, describes researchers seeking to use fermentation and chemical changes to crop by-products to create plastics or adhesives. Scientists also are studying how to create oil-based materials out of natural components. And roughly 100 companies annually, most focused on food and feed production and food safety, are working on projects in CCUR's on-campus pilot-scale processing spaces or at the CCUR-managed BioCentury Research Farm outside Ames.

“I've always enjoyed being on the edge of where science is,” Keener said.

In Iowa, CCUR is the workspace on the edge of innovation.

The center was created in the mid-1980s, when farmers struggled after corn and soybean prices hit bottom. Researchers began to partner with businesses to create new products from those crops. “The way to increase demand is to conduct research and find new uses,”

explained CCUR program manager Darren Jarboe.

Today, companies can use CCUR's pilot-scale processing spaces and equipment to explore ideas on a larger-than-laboratory scale. CIRAS views the center as a valuable resource for linking businesses with the Iowa State researchers who can help bring a promising new idea to fruition.

CIRAS began working closely with the center in 2010, said account manager Brenda Martin. The partnership since has supported 124 projects, increasing sales among participating companies by more than \$13 million.

“CCUR is more than pilot-scale facilities; it's all the affiliated faculty throughout Iowa State and their research in collaboration with industry,” Martin said.

Keener took over as CCUR and BioCentury Farm director in November 2015 after working as a food scientist

and ag/bio engineer around the United States, most recently at Purdue University.

“I feel like I've got a large toolbox with a variety of tools in it”  
— Kevin Keener

At Iowa State, “I feel like I've got a large toolbox with a variety of tools in it,” Keener said. “We have the ability to build system solutions based on any

ideas that companies may have.”

Martin said the CIRAS-CCUR partnership has been aided by Technology Assistance Program funding—a special Iowa legislative appropriation to CIRAS that, among other things, has provided more than \$117,000 to support Iowa companies' involvement in various CIRAS projects featuring CCUR and the BioCentury Research Farm.

The program can pay for part of a researcher's time to experiment on a company-directed project, she said. “It's a significant benefit that supports Iowa companies' innovation capabilities, and we want to see it continue and grow.”

➤ For more information, contact Brenda Martin at [bkmartin@iastate.edu](mailto:bkmartin@iastate.edu) or 515-570-5282.

# Iowa FIRST LEGO® League Close to Top in Per Capita Participation

Iowa now ranks second nationwide in per capita youth membership on a FIRST LEGO League (FLL) team.

Yet, even with another year of explosive growth in Iowa youth getting a STEM boost through research and robots, Camille Schroeder, director of K–12 outreach programs at Iowa State University’s College of Engineering, said the participation milestone does not mean that Iowa’s FLL program has stopped recruiting students and mentors.

“We want to be able to provide this experience for any youth who wants it,” Schroeder said.

Founded in 1998, FLL is a research and robotics-based problem-solving program for children ages 9 to 14. (A separate FIRST LEGO League Junior program caters to children 6 to 10.) A total of 441 Iowa FLL teams participated in 2015.

Teams across the state participate in events throughout November and December each year to show off their learning and skills. State championships are held each January on the Iowa State campus, directed by Iowa State University Engineering K-12 Community Outreach. This year, for the first time, the finals grew from one 72-team event to two 60-team competitions.

Bruce Newendorp, a retired John Deere engineer who now serves as an Iowa assistant regional director for FIRST, said the programs teach students both STEM skills and business decision making.

“They take the standard learning and apply all that to real-world situations,” he said. “You’re going to build one robot, but you might have 10 different ideas about what to do. Those skills are extremely valuable in the real working world.”

Partnerships with business and industry leaders around the state are critical to the program’s success, Schroeder said, since there’s a continual need for volunteers and support through grants to launch additional teams.

Organizers continue to focus on recruiting students who may not otherwise be aware of the program, including younger children, girls, and those from underserved populations.

“We’re pleased to be above the national average” in participation by girls, “but we have a lot more to do.”  
— Camille Schroeder

“We’re pleased to be above the national average” in participation by girls, Schroeder said. “But we have a lot more to do.”

Andy Marshall, a longtime FLL volunteer and FIRST Senior Mentor from Cedar Rapids, said the program can awaken great interest in students. He cited three Iowa companies who decided this year to offer high school internships after interacting with students at an event.

Companies saw “the value and level of professionalism that those students bring to the game,” Marshall said. “You see the students become their better selves in an incredibly short time.”

➤ For more information, visit [www.isek.iastate.edu](http://www.isek.iastate.edu) or e-mail [isek@iastate.edu](mailto:isek@iastate.edu). You can find a complete list of all Iowa State University STEM offerings at [www.ispy.iastate.edu](http://www.ispy.iastate.edu).



# Health Insurance—A Prescription for Fear among Iowa Manufacturers

*Iowa manufacturers' single largest fear, according to a CIRAS survey, is the looming cost of employee health care. And the worry appears to be well placed.*

"If you are a private employer in Iowa, you have reason to be concerned," said Mark Becker, a Johnston-based employer benefits consultant. "There are far more questions than answers right now. On large insurance, there's really no place to run."

Becker and other Iowa experts paint a scary picture of the next few years for employers. The last remaining sections of the U.S. Patient Protection and Affordable Care Act—the law that brought us the term "Obamacare"—take effect in 2017, requiring every business with 50 or more employees to offer them health insurance or face penalties.

A recent CIRAS survey of 256 manufacturers identified employee health insurance costs as the single largest unknown facing their businesses—by far outstripping concerns tied to technology, competition, or the future availability of a skilled workforce.

"I think the biggest thing is the lack of good information," said Ruth Litchfield, a professor in Iowa State University's Department of Food Science and Human Nutrition and an expert in wellness programs. "I think the unknown of it all has them in a panic."

David P. Lind, who produces an annual survey of Iowa employee benefit trends, said Iowa health care costs for employers have grown at 7 to 8 percent in recent years—roughly half the size of increases in the early 2000s, but still more than twice the rate of inflation. Increases come with a lack of control, because the Affordable Care Act requires insurance companies to set rates based on health care costs connected to a particular community. Even major cost-cutting moves by employers may leave rates unchanged, experts say, if a small company is part of a larger population.

"Wellness programs work in that they make you healthier, but they're not necessarily making you less expensive," said Becker. "Employers are really stuck, because there's only so much you can do."

"There are some good options out there," [see box] countered Mike Teachout, co-owner of Focus OneSource, a West Des Moines-based business that handles payroll, insurance, and administrative tasks for companies. "But it's going to take a new way of thinking by some of these employer groups."

➤ **For more information, contact CIRAS program director Mike O'Donnell at [modonnll@iastate.edu](mailto:modonnll@iastate.edu) or 515-294-1588.**

## Five Ways Employers Can Handle Health Care

1. Renew existing (ACA-modified) insurance.
2. Shop other carriers. [This may not matter, since companies increasingly quote similar prices for policies that legally must be similar.]
3. Self-fund. [Complicated, requires employer risk.]
4. Always know whether your Average Employee Count is 50 or above.
5. Sign on with a professional employer organization that groups multiple businesses under one insurance policy.

Source: Mike Teachout, Focus OneSource

## Iowa State's Cordray, Sebranek Named to Meat Industry Hall of Fame

Two Iowa State University professors have been named 2016 inductees to the national Meat Industry Hall of Fame.

Joseph Cordray and Joseph Sebranek, professors in the Department of Animal Science, are slated to be honored along with five other industry leaders at the International Production and Processing Expo in Atlanta on January 31, 2017.

The Meat Industry Hall of Fame was founded in 2008 and currently has 77 members, including Dave Thomas, Frank Perdue, Ray Kroc, Don Tyson, and Jimmy Dean. To be nominated for membership, according to a Hall of Fame news release, candidates must have "contributed significant innovation, achieved notable business success or otherwise positively impacted their organization, institutions or larger industry segment" and also have "undertaken noteworthy community service."

Cordray, who has a PhD in meat science from Auburn University, has spent the last 20 years as Professor-in-Charge of the Iowa State Meat Laboratory and its extension courses.

Sebranek, who has a PhD in meat science from the University of Wisconsin-Madison, has been engaged since 1975 in teaching, extension, and research at Iowa State involving processed and cured meats. Sebranek was named a Distinguished Professor in 2008.

CIRAS congratulates Cordray and Sebranek.



Joseph Cordray



Joseph Sebranek

■ **Food & Beverage, Feed & Grain Processors Innovation Summit**  
November 15, 2016  
8:00 a.m. to 4:00 p.m.  
Gateway Hotel, Ames

■ **Subcontracting Opportunities**  
November 15, 2016  
9:00 a.m. to 10:00 a.m.  
Webinar

■ **Government Networking Group**  
November 18, 2016  
9:00 a.m. to 10:00 a.m.  
Bettendorf

■ **Marketing to the Government Session 5: Using Unsolicited Proposals for Marketing**  
November 22, 2016  
9:00 a.m. to 10:00 a.m.  
Webinar

■ **GovCon 101**  
December 13, 2016  
9:00 a.m. to 10:30 a.m.  
Webinar

■ **Registrations/Certifications**  
December 13, 2016  
9:00 a.m. to 11:30 a.m.  
Cedar Falls

■ **Cured Meat Short Course**  
January 17–19, 2017  
8:00 a.m. to 5:00 p.m.  
Ames

**For more information on these and other similar events, please visit [www.ciras.iastate.edu/events.asp](http://www.ciras.iastate.edu/events.asp).**



## Food & Beverage, Feed & Grain and Registrations/Certifications

Two major events highlight the CIRAS calendar this fall—an innovation summit to discuss technology in the food industry and an opportunity to hear from a host of government officials about what it takes to get registered/certified for doing business with their agencies.

The **Food & Beverage, Feed & Grain Processors Innovation Summit**, scheduled for November 15 at the Gateway Hotel and Conference Center in Ames, is the latest in a series of sector-by-sector events CIRAS has held to help Iowa companies develop individualized ways to incorporate new technologies into their businesses. Participants will spend a morning listening to short, interactive technology presentations followed by an afternoon session with a tradeshow-like environment.

Elsewhere, a **Registrations/Certifications Workshop**, scheduled from 9 a.m. to 11:30 a.m. on December 13 in Cedar Falls, will help business owners learn about the individual steps they need to take to do business with Iowa's federal, state, and local governments.

Attendees will hear from several different agencies and have the chance to participate in a roundtable discussion.

**For information about the Innovation Summit, contact Pete Nadolny at [pnadolny@iastate.edu](mailto:pnadolny@iastate.edu) or by calling 515-277-2471. To register for the Registrations/Certifications Workshop, visit <http://goo.gl/f3kd1S>.**

## For the Record

The cornerstones of CIRAS' support structure were renewed by separate government agencies this summer in moves that mean CIRAS will continue to maintain access to its vast network of expertise. The U.S. Defense Logistics Agency in July renewed CIRAS as Iowa's local Procurement Technical Assistance Center. CIRAS will receive \$600,000 during fiscal 2017. The money will be matched with CIRAS funds to provide \$1.2 million of assistance to Iowa businesses in navigating the world of government contracting.

At the same time, the National Institute of Standards and Technology (NIST) reaffirmed CIRAS as the Iowa affiliate of NIST's Manufacturing Extension Partnership. The \$1.4 million award will be combined with additional funds to create a program budget of \$4.2 million.

The Economic Development Administration also renewed CIRAS' funding for its Iowa University Center Economic Development Program. The \$250,000 award will be combined with matching CIRAS funds to create a program budget of \$500,000.

# CONTACT INFORMATION



Since 1963, we have delivered proven services to enhance the performance of industry. Our approach—Engage. Educate. Embed.—creates specific solutions that allow each business and its community to prosper and grow. Coupled with a satisfaction guarantee, our typical client has achieved a 200% ROI. Clients have reported an economic impact of more than \$2 billion over the past five years.

				Account Manager	Enterprise Leadership	Growth	Productivity	Technology	Operations
Cox, Ronald A.	515-460-1123	rcox@iastate.edu	Ames						●
Alexander, Andrew L.	402-547-0333	andyalex@iastate.edu	Council Bluffs		●	●	●		
Bangalore, Savitha	515-294-5240	savitha@iastate.edu	Ames						●
Barton, Leah M.	515-291-0733	bartonl@iastate.edu	Ames						●
Berge, Paul	515-294-5972	pmberge@iastate.edu	Ames					●	
Boesenberg, Adam J.	515-294-5903	aboesenb@iastate.edu	Ames					●	
Burant, Melissa M.	563-726-9958	mmburant@iastate.edu	Bettendorf		●	●	●		
Clark, Susan K.	319-329-9267	skclark@iastate.edu	Ames		●		●		
Colburn, Tina M.	515-509-5311	tcolburn@iastate.edu	Ames						●
Donald, Joy N.	319-359-0206	jdonald@iastate.edu	Ames		●	●			
Dunnwald, Paul	515-509-1377	dunnwald@iastate.edu	Urbandale	●					
Eckhoff, Jeff	515-231-7826	eckhoffj@iastate.edu	Ames						●
Essex, Jodi K.	515-509-0769	jodir@iastate.edu	West Des Moines		●	●	●		
Fagle, Julie A.	319-310-8612	jafagle@iastate.edu	Marion		●	●	●		
Galleger, Sean T.	515-290-0181	galleger@iastate.edu	Waterloo	●					
Gormley, Paul A.	319-721-5357	gormley@iastate.edu	Marion		●	●			
Hill, Chris H.	515-313-8251	chhill@iastate.edu	Ames					●	
Kelch, Laurel M.	515-294-5472	lmkelch@iastate.edu	Ames						●
Martin, Brenda	515-570-5282	bkmartin@iastate.edu	Ames	●					
Mohr, Jeff	515-450-7639	jeffmohr@iastate.edu	Ames		●		●		
Muff, Brian J.	515-520-1033	bmuff@iastate.edu	Denison					●	
Nadolny, Pete J.	515-227-2471	pnadolny@iastate.edu	Ames		●	●			
Novak, Carey E.	515-408-4257	cenovak@iastate.edu	Ames					●	
O'Donnell, Michael R.	515-509-4379	modonnll@iastate.edu	Ames		●			●	
Poe, Jim R.	515-290-1398	jrpoee@iastate.edu	Ames				●	●	
Pruszek, Rudy	563-599-0645	rpruszek@iastate.edu	Dubuque				●		
Reinig, Mark E.	515-231-4150	mreinig@iastate.edu	Elkader	●	●				
Roberts, John	515-294-0932	jarobert@iastate.edu	Ames					●	
Russenberger, Pamela	515-509-7814	plrussen@iastate.edu	West Des Moines		●	●	●		
Schneider, Marc A.	563-221-1596	maschn@iastate.edu	DeWitt			●	●		
Srinivasan, Shankar	515-290-6702	srigshan@iastate.edu	Ames			●		●	
Thach, Christopher A.	515-294-7731	cthach@iastate.edu	Ames						●
Thompson, Derek L.	515-419-2163	thompson@iastate.edu	Boone	●					
Volkman, Glenn	515-205-3786	gvolkman@iastate.edu	Grinnell	●					
White, Beth	563-370-2166	whiteb@iastate.edu	Bettendorf		●	●	●		
Willett, Michael	319-240-2488	mwillett@iastate.edu	Waterloo				●		
Zimmerman, Mary J.	515-450-1278	maryz@iastate.edu	Ames		●	●	●		

## CIRAS PARTNERS

Center for Crops Utilization Research  
Center for Nondestructive Evaluation  
College of Engineering  
Community and Economic Development

Iowa State University

Department of Environmental Health and Safety  
Engineering Career Services  
Engineering-LAS Online Learning  
Extension and Outreach  
Industrial Assessment Center  
Meat Science Extension

Des Moines Area Community College  
Iowa Area Development Group  
Iowa Association of Business and Industry  
Iowa Business Council  
Iowa Farm Bureau  
Iowa Innovation Corporation

Iowa Lean Consortium  
Iowa Sustainable Business Forum  
North Iowa Area Community College  
Northeast Iowa Community College  
Quad Cities Manufacturing Innovation Hub

# IOWA STATE UNIVERSITY

Office of Economic Development and Industry Relations

**College of Engineering**

**Center for Industrial Research and Service**

1805 Collaboration Place, Suite 2300

Ames, Iowa 50010-9166



PRINTED WITH  
**SOY INK**

[www.ciras.iastate.edu](http://www.ciras.iastate.edu)

## INNOVATION

### CIRAS 3D Printer Building a Foundation for Future Success while Stabilizing Cheerleaders

*A trailblazing exploration of metal additive manufacturing as a new way for Iowa companies to make tooling could soon reap rewards in terms of cheerleaders with better balance.*

American Athletic Inc., a Jefferson, Iowa-based sports equipment manufacturer, plans to launch a new product this fall aimed at helping high school and college cheerleaders around the country find a safer way to strengthen leg muscles and learn the kind of balance necessary for standing in someone's hands. American Athletic describes its new Elite™ Cheer Stand as a safer, closer-to-the-floor way for cheerleaders to train. The product, which also was tested by Iowa State University cheerleaders, includes multiple plastic parts produced by Ottumwa-based Angstrom Precision Molding—using a mold built by CIRAS' metal 3D printer.

The new cheer stand is one of many projects CIRAS is using to show companies how additive manufacturing can change design limitations and open up new possibilities for their businesses.

"It's early," said Jim Johnson, chief operating officer at Angstrom. "This is the first mold like this we've completed. We'll know more from design to design and part to part than we do now. But it looks very promising."

Chris Hill, director of CIRAS' Technology Assistance Program, said he's working with Angstrom to design several different sizes of standard mold bases with removable cores. The

reusable bases will be paired with swappable inserts that can be printed quickly in an additive manufacturing machine—and without many of the limitations of traditional production methods.

CIRAS' machine uses powdered metal and a laser to build complicated items one 40-micron-thick layer at a time. Johnson estimates he will be able to make parts 10 percent faster using 3D printed molds, because their curved cooling channels are more efficient. If a mold stays cool, then plastic parts can be removed from it faster, alleviating concerns about warping.

Hill said the new system will be "more expensive initially, but cheaper down the road as you bring more tools in and use the standardized bases.... But processes will get faster, and those costs will change. The story will get better to tell."

Hill said an upcoming phase should extract even more cost savings by optimizing the design of inserts to use less material.

Senad Salkic, senior design engineer at American Athletic, praised CIRAS' help in designing the Elite™ Cheer Stand. "Additive manufacturing means CIRAS helped us keep our initial costs low, which results in a more affordable product for our customers."

**For more information, contact Chris Hill at [chhill@iastate.edu](mailto:chhill@iastate.edu) or 515-294-5416.**

